

A PLANAR LIGHTWAVE CIRCUIT ACTIVE DEVICE METALLIZATION
PROCESS

ABSTRACT OF THE DISCLOSURE

5 A method for making a resistive heater for a planar lightwave circuit. The method includes the step of depositing a resistive layer on a top clad of a planar lightwave circuit. An interconnect layer is subsequently deposited over the resistive layer. The resistive layer can be tungsten and the interconnect layer can be aluminum. The interconnect layer is then etched to define a heater interconnect, wherein the heater interconnect is disposed over the resistive layer and has a first width. The heater interconnect is then masked, and the resistive layer is etched to define a resistive heater. The resistive heater is disposed beneath the heater interconnect and has a second width larger than the first width. The heater interconnect is defined to include a heater conduct region between a first contact pad and a second contact pad such that a current
10 between the first contact pad and the second contact pad is conducted through the resistive heater, thereby generating heat which is conducted into the top clad of the planar lightwave circuit. The difference between the first width of the heater interconnect and the larger second width of the underlying resistive heater is determined to decrease an alignment sensitivity of a lithography process for masking the heater interconnect. A dry etch process can be used to etch the aluminum interconnect layer and/or the tungsten resistive layer. The dry etch process can be a reactive ion etching process. A wet etch process can be used to etch the aluminum interconnect layer, wherein the wet etch process does not attack the tungsten.
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